RC8650 Two-Wire Serial Interface

The RC8650, and products utilizing the RC8650 (including the V8600A and DoubleTalk LT), rely on the CTS handshake signal to control the flow of data through the serial port. The purpose of this application note is to introduce two methods that can be used to reliably communicate with the RC8650, using only RXD and ground.

Implementation

The RC8650 can handle data streams at speeds of up to 115,200 bps without handshaking, *as long as the RC8650 is not producing output at the same time*. It is when the RC8650 is active that it cannot respond to incoming data as quickly, resulting in the possible loss of data if CTS is not monitored. In applications that cannot monitor CTS, either one of the following methods can be used to send data to the RC8650 reliably:

1. Utilize a baud rate of 2,400 bps or lower. Testing has shown that at these speeds, one can reliably send data without handshaking, even when the RC8650 is active.

2. Avoid sending data while the RC8650 is active. If the messages are relatively short, a simple software time delay between messages will do. Otherwise, do not allow the RC8650 to begin translating a message until *all* of the message has been sent. This is accomplished by preventing any NUL or CR characters from being sent with the message, as they are what cause translation to begin. You must still send a NUL or CR at the end of the message, unless the RC8650's Timeout timer has been activated (described in the RC8650 datasheet)—otherwise the message will just sit in the input buffer indefinitely.

Keep in mind that neither of the above methods will prevent the loss of data if the RC8650's input buffer becomes full.

If you intend to download RCStudio data files (.sfx, .dix, .pcm, and/or .grt) to the RC8650, you must use RCLink to download the files. Neither RCStudio nor command line methods will work properly without CTS. There is no baud rate limitation when using RCLink; 115,200 bps may be used, if desired.